

Ethnobotany of Ghalegay, District Swat, Pakistan*

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Abstract: Ethnobotanical study of plants revealed that the local community of Ghalegy, District Swat, invariably uses 126 species of 59 families for various purposes. Based on their traditional local uses, fifty-seven species (45.2%) were classified as medicinal, forty-seven as fire wood (37.3%), forty-five as forage (35.7%), twenty-eight as honey bee species (22.2%), twenty-seven as vegetable species (21.4%), 25 as edible fruits (14 wild and 11 cultivated), thirteen as timber wood (10.3%), twelve as ornamental (9.5%), eleven as furniture wood, ten as shelter and thatch makers (7.9%), ten as fencing (7.9%), five as poisonous (4%), four as religious/superstitious species, three species used in making hand sticks and wooden tools (2.4%), three as utensil cleaner species (2.4%), three as evil repellent and one as fish poisoning species. The area is in plant resources and traditional knowledge but it needs ecological management for its sustainability.

Key words: Ethnobotany; Medicinal plants; Ghalegay; Pakistan

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1 Introduction

The socio-economic uplift of remote areas partly depend upon plant resources. The inhabitants of Ghalegay besides serving in government agencies earn livelihood from forest resources and agriculture. There is an everlasting obligate dependence of mankind on plants. It therefore becomes important to see into the sustainable utilization of plant resources for future improvement. Forests are source of maintaining genetic diversity of bioresources. Ethnobotanical knowledge has been based on the local wisdom and confidence of man on traditional utilization of plants. Therefore, this trustworthy knowledge is has become basis for many novel medicinal and commercial preparations. Pammer and Sharma (1992) reported that wild apricot (*Prunus* sp.) is eaten fresh, used for preparing an alcoholic drink, edible kernel contains 48.6% oil which is employed in cooking and burning lamps and as a hair oil. Smith (1993) reported 132 plant species with their traditional uses. Motler (1994) reported insecticidal, antibacterial and antifungal activities of *Acerus calamus*. Ahmad and Holdsworth (1995) provided information on the ethnopharmacognosy of 31 medicinal plants.

Bajpai *et al.* (1995) reported 51 plants used to treat a various ailments in rural areas of Varanasi, India. Bukenya and Carasco (1995) documented forty-one species of *Solanum* utilized as food, medicinal and ornamental plants in Uganda. Bhattacharya (1995) reported eight species of plants used for treating renal diseases. Chapman *et al.* (1995) reported the uses of 103 plants and animals from Great Victoria Desert. Grosvenor *et al.* (1995) recorded that out of 114 plant species, 50% were used to combat fever, 33% for treating diarrhoea and 31% for curing other gastrointestinal disorders. Johns *et al.* (1995) listed 45 species used as remedies for gastrointestinal problems. Kaufmann and Elvin (1995) investigated that eight plants were used for treating tooth ach. Manandhar (1995) reported 48 species with anthelmintic activity. Ravindra *et al.* (1995) listed various traditional uses of forest plants by the tribal of Bihar India. Yesilada *et al.* (1995) reported 256 remedies prepared from 124 plant and three animal species in folk medicine in Taurus mountains in South Anatolia.

Some ethnobotanical investigations have also been done in various parts of Pakistan. Haq and Hussain

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(1993) listed 53 wild and 17 cultivated plants of local medicinal uses. Sadaqat (1995) described medicinal uses of ten cucurbitaceous plants. Hussain *et al.* (1995) documented the ethnobotany of 125 plants of Dabargai Hills, Swat. The medicinal uses of some plants of Margala Hills is reported by Shinwari and Khan (1999). Khan *et al.* (2003) described traditional uses of plants of Bunir District. Recently Sher *et al.* (2004, 2005) and Begum *et al.* (2005) have provided some information on the ethnobotany and conservation of medicinal plants in Swat.

The review shows that plants are traditionally used by mankind for many obvious needs. However, meagre information exists on the ethnobotany of plants of Ghalegay, District Swat. Ghalegy Hills lie between 34.44° N latitude and 73.4° E longitude in District Swat. The average altitude of the valley bed at village Ghalegay is 950 m that rises up to 3000 m up hills. The climate of the area is mild in summers with sub tropical touch at lower altitude and severe winter cold in temperate and sub alpine regions. The present study reports the local uses of some plants of village Ghalegay. The findings might help the resource managers in their future studies undertaken for the conservation of plant resources and development of this area.

2 Materials and Methods

The information about the local traditional uses of plants were gathered by interviewing 250 elderly and knowledgeable persons from the area (Hussain *et al.*, 1995) through an open ended questionnaire. Scientific nomenclature is from that of Flora of Pakistan (Nasir and Ali, 1971–1995; Ali and Qaiser, 1995–2004). The identification of plants was confirmed at National Herbarium, National Agriculture Research Centre, Islamabad. The study was conducted during summer (1996–97).

3 Results and Discussion

One hundred and twenty-six species of 59 families had various local traditional uses in the investigated area (Table 1). The major bulk of plants i. e. fifty-seven (45.2%) species including *Artemisia scoparia*, *Berberis lycium*, *Canabis sativa*, *Diospyrus lotus*,

Prunus armeniaca, *Taraxacum officinale*, *Berberis lycium*, *Alium sativum*, *Rosa moschata*, *Plantago major*, *Punica granatum*, *Solanum nigrum*, *Myrtus communis* and *Ziziphus sativa* are used in the local health care system. They are mostly used as single drugs or in combination of two or more plants. Similarly a plant might be used for curing a single disease or more than two different ailments. Medicinal plants are mostly collected by women, children and shepherds for personal use and for selling to local drug dealers. *Andradhne cordifolia* is used to cure various diseases in livestock.

People living in and around Ghalegay mostly depend on the adjacent forests for their fire wood requirement. They collect almost whole plant or their parts (stems and branches) for their domestic needs from 47 species used as fire wood. *Pinus wallichiana*, *Pinus roxburghii*, *Acacia modesta*, *Olea ferruginea*, *Quercus baloot*, *Q. dilatata*, *Platanus orientalis*, *Ailanthus altissima*, *Morus alba*, *M. nigra* and *Prunus armeniaca* were among the tree species; while *Dodonaea viscosa*, *Indigfera gerardiana*, *Plectranthus rugosus* and *Cotoneaster microphylla* were some of the shrubby fire wood plants. *Olea ferruginea*, *Quercus dilatata*, *Q. baloot*, *Acacia modesta*, *Zizyphus sativa*, *Z. jujuba* and *Dodonaea viscosa* were preferred species as they produce less smoke, emit better flame with high heat value. Due to continuous over exploitation and deforestation such species have become endangered. Hussain *et al.* (1995) and Beg and Khan (1980, 1984) have also stated that oak forests in Swat have declined due to deforestation. Some of these fire wood plants also serve as medicinal, furniture and timber wood plants.

Forty-five species (35.7%), including grasses and some shrubs served as fodder plants. Similarly, Hussain *et al.* (1995) also reported many plants from other parts of Swat, including some plants recorded in the present study, used as fodder. The local community depends on livestock for milk, meat and wool. Young animals are sold for earning money. The area is freely grazed without any ecological management. This has led to over grazing and deterioration of the habitat

Table 1 Ethnobotanical profile of village Ghalegay, District Swat, Pakistan

S.No.	Species (Family)	Local name	Medicinal uses	Other miscellaneous uses
1	<i>Acacia modesta</i> Wall. (Mimosaceae)	Palosa	Gum used as a tonic and stimulant.	A good firewood, leaves are fodder for goat, visited by honey bees. A shrine has been named as Palosa Baba after it.
2	<i>Adiantum vasica</i> Nees. (Acanthaceae)	Baikarr		Plant poisonous, insect repellent, visited by honey bees.
3	<i>Adiantum nigrum</i> L. (Pteridaceae)	Parsotal		Ornamental fern.
4	<i>Adiantum venustum</i> D. Don. (Pteridaceae)	Parsotal		Ornamental fern.
5	<i>Ailanthus altissima</i> (Mill.) Swingle. (Simarubaceae)	Bikara		A fast growing invader plant. Stem and major branches used as construction wood, firewood, as sheltering material and leaves as fodder.
6	<i>Alium cepa</i> L. (Alliaceae)	Piaz	Onion extract is orally taken to control diarrhoea.	Used as salad, vegetable, spices and condiment.
7	<i>Alium satium</i> L. (Alliaceae)	Uga	Said to be cure for hypertension.	Animal fodder, foliage used as potherb.
8	<i>Anaranthus viridis</i> L. (Anaranthaceae)	Chalwari	Said to cure diseases in livestock.	Branches used as firewood.
9	<i>Andrachne cordifolia</i> (Dene) Muell. (Euphorbiaceae)			Considered poisonous.
10	<i>Arisaema flavum</i> (Forssk) Schott. (Araceae)			Used as fodder in fresh & dry form.
11	<i>Aristida cynantha</i> Nees ex Steud. (Poaceae)	Wakha		
12	<i>Artemisia scoparia</i> Waldst & Ket. (Asteraceae)	Javkay	Aqueous extract from shoots is helmenthicide and vermifuge.	
13	<i>Berberis lycium</i> Royle. (Berberidaceae)	Kwaray	Aqueous extract from roots are taken orally to cure colic pain and diarrhoea and internal wounds.	Low quality firewood, used for making fences and hedges, fruits edible.
14	<i>Bergenia himalaica</i> Boniss. (Saxifragaceae)	Makanpat	Said to be medicinal.	A poor quality fodder.
15	<i>Brassica campestris</i> var. <i>sarson</i> L. (Brassicaceae)	Sharshad	Seed oil is used to cure skin eczema, rashes and burns etc.	Seeds yield edible. Leaves and tender shoots used as vegetable. Seed cake is a nutritious feed for cattle.
16	<i>Brassica campestris</i> var. <i>rapa</i> (L.) Hartman (Brassicaceae)	Tiapar	Recommended for treating various stomach disorders and ulcer.	Tender leaves and underground swollen stems used as vegetable.
17	<i>Brassica oleracea</i> var. <i>botrytis</i> L. (Brassicaceae)	Ghohi	Leaves and fruits are used for treating rheumatism.	Used as vegetable, causes flatulence.
18	<i>Buxus sempervirens</i> HK. (Buxaceae)	Sharshad		Plant is poisonous to livestock and human beings. Low quality fodder. The plant name is used for naming men such as Sharshad Khan, Sharshad Gul and Sharshad Hussain etc.
19	<i>Canabis sativa</i> L. (Cannabinaceae)	Bung	Aqueous plant extract is taken as such or mixed with milk to make sedative and narcotic drink called Tandai. The term Bhangi is applied to the addicts.	Visited by Honeybees. The sedative nature of plant has been praised a lot in the Pushto poetry.
20	<i>Capsicum annum</i> L. (Solanaceae)	Marchakay		Chilli is a cultivated for as condiment, salad and fresh vegetable.
21	<i>Capsicum frutescens</i> L. (Solanaceae)	Marchakay		Uses same as above.
22	<i>Celtis coccinea</i> L. (Ulmaceae)	Tagha		Low quality timber, furniture and fire wood. Leaves used as fodder.
23	<i>Centella asiatica</i> L. (Apiaceae)			Ornamental fern.
24	<i>Cenchrus dalhousiae</i> (HK.) C. Chr. (Aspleniaceae)			
25	<i>Clematis barbellata</i> Edgew. (Ranunculaceae)			Leaves used as fodder for sheep.
26	<i>Colocasia esculentum</i> var. <i>antiquorum</i> L. (Araceae)			Cultivated for its edible corn.
27	<i>Conyza bonariensis</i> (L.) Cronquest. (Asteraceae)			Low quality fodder.
28	<i>Conyza canadensis</i> (L.) Cronquest. (Asteraceae)			Low quality fodder.
29	<i>Cotandrum satium</i> L. (Apiaceae)		Leaves and seeds are carminative. Coriander oil is medicinal.	Coriander is cultivated for its fragrant leaves and fruits, which are used as a flavouring agent and condiments in various dishes.
30	<i>Cotoneaster microphylla</i> Wall. (Rosaceae)	Marorang		Stems and branches used as a firewood, thatching and sheltering material for roofs and temporary shade shelters. Leaves serve as fodder.
31	<i>Cucumis sativus</i> L. (Cucurbitaceae)	Badrang		Cucumber is cultivated as green salad.
32	<i>Cucurbita maxima</i> Duch ex Lam. (Cucurbitaceae)	Kadoo	Useful for patients of stomach ulcer and other intestinal ailments.	Tender leaves and shoots are used as potherb. Mature fruits are used for preparing sweet dishes such as halwa, jams and jellies etc.

Continue table 1

S.No.	Species (Family)	Local name	Medicinal uses	Other miscellaneous uses
33	<i>Cucurbita pepo</i> L. (Cucurbitaceae)	Bindol		Cultivated as vegetable. Tender leaves and shoots are used as potherb.
34	<i>Cynopogon javanicus</i> (Jones) Schult. (Poaceae)	Sargary		Low quality cattle fodder.
35	<i>Cynodon dactylon</i> L. (Poaceae)	Kabal, Wakhra		Good quality fodder for livestock.
36	<i>Daphne mucronata</i> Royle. (Thymeleaceae)			Branches used as firewood. Fruits and leaves are poisonous to human beings and livestock.
37	<i>Debregeasia salicifolia</i> (D. Don) Randle. (Urticaceae)	Ajlaey		Branches and stems are low quality firewood.
38	<i>Dicliptera roxburghiana</i> Nees. (Acanthaceae)	Gulgulnay		Low quality fodder for cattle. Visited by Honeybees.
39	<i>Diospyros kaki</i> L. (Ebenaceae)	Ziar Anlook, Persimmon	Fruit laxative.	The Japanese Persimmon is cultivated for commercial purpose. The fresh fruits have poor shelf life. Fruits are dried locally. A valley has been named after it as Anlook dara.
40	<i>Diospyros lotus</i> L. (Ebenaceae)	Anlook, Tor anlook	Fruits nutritious and purgative if taken in large quantity.	Wild & cultivated for its edible fruits. Low quality furniture wood. Stems and branches serve as firewood. Dried fruits have long shelf life and sold in the market @ Rs. 20-30/Kg.
41	<i>Dryopteris</i> sp. (Pteridaceae)	Kwanjey		Young tender fronds are favourite vegetable with a selling price of Rs. 20-25/kg in the local market.
42	<i>Equisetum arvense</i> L. (Equisetaceae)	Nakra, Bandhara		Shoots are used for cleaning domestic utensils.
43	<i>Eriophorum comosum</i> (Wall. ex Roxb.) Nees. (Cyperaceae)	Wakhra		Low quality fodder for cattle.
44	<i>Eucalyptus</i> Sp. (Myrtaceae)	Lachi		Low quality timber and fire wood.
45	<i>Euphorbia prostrata</i> Ait. (Euphorbiaceae)	Inzar	Fruits are laxative and cure for diabetes. Latex from shoot is applied to remove warts, spines and acnes from skin.	Rarely grazed by goat. A common weed of cultivation.
46	<i>Ficus palmata</i> (Moraceae)		Said to be medicinal.	Fruits are edible. Low quality firewood. Leaves are low quality fodder. According to local superstitious stories if some one sees fig flowers, he/she will become rich. The tree is considered to be a Holy tree. Men are named after it such as Inzar Gul, which means fig flower. Fruits are edible and shoots are fodder.
47	<i>Fragaria indica</i> Andr. (Rosaceae)	Zimaky Toot		Used as a firewood and making fences.
48	<i>Gentiana kurroo</i> Royle. (Primulaceae)	Soor Azghay		Leaves are used as fodder.
49	<i>Maytenus royleanus</i> (Wall.) Lawson. (Celastraceae)	Wano Kalay	Crushed leaves or its aqueous extracts are said to be a cure for cancer.	Sunflower is cultivated for its edible seed oil and as ornamental. Dried stems are used as firewood.
50	<i>Hedera nepalensis</i> K. Koch. (Araliaceae)	Noor Parast	Seed oil is considered good for heart diseases.	Fresh foliage is fodder for cattle. Dried shoots serve as mats in mosques. Commonly cultivated vegetable, which is sold in the market @ Rs. 20-40/Kg. Dried plants are used as fuel wood.
51	<i>Helianthus annuus</i> L. (Asteraceae)	Barwaza Bhindai		Shoots and branches used as fuel wood and fodder for goat, sheep and cattle.
52	<i>Heteropogon</i> sp. (Poaceae)	Chwareja		Low quality fodder.
53	<i>Hibiscus esculentus</i> L. (Malvaceae)	Chambeli, Yasmin		An ornamental plant. Girls are named after its white fragrant flowers such as Yasmin Khan, Yasmin Gul, Yasmin Bibi and Chambeli.
54	<i>Indigofera gerardiana</i> Wall ex Baker. (Papilionaceae)	Chuz, Akore	Nut edible and yield walnut oil, which is considered as brain tonic. Bark, locally called Dandasa, is used for cleaning teeth and considered ant microbial.	Walnut is both wild and cultivated. Wood is highly priced for making furniture especially suitable for carving. The bark, locally called Dandasa, is used for cleaning teeth and used as cosmetic for lips. Dandasa is sold through Pakistan at high price.
55	<i>Indula grandiflora</i> Willd. (Asteraceae)			Salad is cultivated for domestic use and for selling in the local market.
56	<i>Jasminum officinale</i> L. (Oleaceae)	Salad		Good quality fodder for livestock.
57	<i>Juglans regia</i> L. (Juglandaceae)			
58	<i>Lactuca sativa</i> L. (Asteraceae)			
59	<i>Lespedeza puncia</i> (L. f) Persoon. (Papilionaceae)			

Continue table 1

S.No.	Species (Family)	Local name	Medicinal uses	Other miscellaneous uses
60	<i>Luffa aegyptiaca</i> L. (Cucurbitaceae)	Toray	Considered good for patients with gastrointestinal problems.	Sponge gourd is cultivated as vegetable. Dried fruit skeleton is used as sponge for cleaning domestic utensils.
61	<i>Lycopersicon esculentum</i> Miller (Solanaceae)	Tamatar, Tamater		Tomatoes are cultivated for personal use and commercial selling, used as salad, in cooking as flavouring and tasting agent. It excessive use causes stone formation in kidneys.
62	<i>Medicago polymorpha</i> L. (Papilionaceae)	Shepashtay, Peshitarr	Seeds and foliage considered demulcent, cure for indigestion and stomachache.	Wild leafy vegetable, fodder and honey bee plant.
63	<i>Melia azadirach</i> L. (Meliaceae)	Shanday, Bakayan	The decoction of leaves controls hypertension.	It is prized as termite resistant timber and furniture wood. Stems and branches used as fire wood and making shelters. Leaves are fodder for goat. A common shade and honey bee plant.
64	<i>Micromeria biflora</i> (Ham) Bth (Lamiaceae)			Low quality fodder.
65	<i>Momordica charantia</i> L. (Cucurbitaceae)	Karele	The aqueous extract from fruit cures fever and diabetes.	Bitter gourd is commonly cultivated as vegetable for domestic and commercial purpose.
66	<i>Morus alba</i> L. (Moraceae)	SpinToot	Fruits are laxative, purgative if taken in large quantity.	Low quality timber and furniture wood but good quality fire wood. Fresh leaves are fodder and feed for rearing silkworms.
67	<i>Morus laevigata</i> Wall ex Brandis (Moraceae)	Shah toot	Same as <i>Morus alba</i> .	Same as <i>Morus alba</i> .
68	<i>Morus nigra</i> L. (Moraceae)	Toor toot	Same as <i>Morus alba</i> .	Same as <i>Morus alba</i> .
69	<i>Myrsine africana</i> L. (Myrsinaceae)	Mararang	Two-three leaves are boiled in tea as flavouring and stimulant agent. Edible fruits are considered carminative and appetizer.	Low quality firewood. Used as thatching material in mud roofs. Fruits edible.
70	<i>Myrtus communis</i> L. (Myrtaceae)	Mannoo		Two-three leaves are boiled rice as flavouring agent. Sometimes men are named as Manno Khan after it.
71	<i>Nerium oleander</i> L. (Apocynaceae)	Chandeer		Poisonous and ornamental.
72	<i>Nicotiana tabacum</i> L. (Solanaceae)	Tambacoo	Powdered leaves are applied as antiseptic to heal wounds.	Tobacco is one of the most important cash crops. Dried leaves are sold to cigarette industries. It is also used in making snuff. Dried stems after harvest of leaves are used as fuel wood.
73	<i>Olea ferruginea</i> Royle. (Oleaceae)	Khona	Edible seeds are used for treating toothache and antiperiodics.	Wood is used for making furniture, plough, axe, and hoe handles. Branches are used as firewood. Seeds are edible. It is considered to be a Holy tree as it has been mentioned in 3Holy Quran. Men are named after it as <i>Khona Gail</i> . It is very common in Holy shrines and graveyards.
74	<i>Origanum vulgare</i> L. (Lamiaceae)			Low quality fodder. Used in making fences and hedges.
75	<i>Oryza sativa</i> L. (Poaceae)	Wriyy	Aqueous extract from leaves cures tooth ach and ear ach.	Rice is cultivated. Straws are used as cattle feed, thatching material for roof and packing material for fruit boxes.
76	<i>Oxostegia limbata</i> (Bth.) Boiss. (Lamiaceae)	Spin azghay	Leaves eaten to cure stomach disorders such as indigestion etc.	Used for fencing field borders and cattle sheds. Visited by Honey bees.
77	<i>Oxalis corniculata</i> L. (Oxalidaceae)	Marzakay, Tarookay		Low quality fodder. Common weed of cultivation.
78	<i>Parrotiopsis jaquemontiana</i> (Dene.) Rehder. (Hamamelidaceae)	Spera Botay		Whole plant used as firewood and for making shelters. Visited by Honey bees.
79	<i>Periploca aphylla</i> Dene. (Asclepiadaceae)	Jaula	Turpentine oil and resins used medicinally.	The latex obtained from stems is used as chewing gum.
80	<i>Pinus roxburghii</i> Sargent. (Pinaceae)	Nakhlar		It is low quality timber and furniture wood. Stems, branches, cones and needles used as for firewood. Dried needles are used in making shade shelters and used for fruit packing. Seeds edible.
81	<i>Pinus wallichiana</i> A. B. Jackson. (Pinaceae)	Peuch	Resin is used for curing various skin disorders.	Blue pine is the second best timber wood in Pakistan. Long poles are used in making wooden bridges and beams, beam-lets in roofs. Best furniture. Branches, cones and needles serve as firewood. Dried needles are used in fruit packing. Seeds edible.
82	<i>Pisum sativum</i> L. (Papilionaceae)	Matar		Edible pea is cultivated as a commercial vegetable.
83	<i>Plantago major</i> L. (Plantaginaceae)	Kopra-Ispaghul	Seeds called ispaghul are used as laxative and for	

Continue table 1

S.No.	Species (Family)	Local name	Medicinal uses	Other miscellaneous uses
84	<i>Platanus orientalis</i> L. (Platanaceae)	Chinar	treating constipation.	Good quality timber and furniture wood, which is red coloured and easy to carve. Roadside shade tree.
85	<i>Plectranthus rugosus</i> (Walser) Bth. (Lamiaceae)	Spirkay		Whole plant used as firewood, thatching material for making temporary shelters. Visited by Honeybee.
86	<i>Polygonum glabrum</i> Willd. (Polygonaceae)	Pulpalak		Crushed plants are added to water bodies to kill fishes for fishing.
87	<i>Populus nigra</i> L. (Salicaceae)	Spardad		Low quality timber wood. Long poles are used for making shelters and low cost beams. Wood is also used for making match sticks and boxes, making fruit packing boxes (crates). Stems and branches used as firewood.
88	<i>Prunus armeniaca</i> L (Rosaceae)	Khubani	Gum obtained from stems is considered as tonic. Considered as anticancer plant. Fruits are laxative.	Apricot is commonly cultivated as a commercial fruit. The dried fruits are cooked in rice and meat Locally jams, jellies and juices are prepared. Pruned branches serve as firewood. Leaves are used as fodder. Visited by honeybees.
89	<i>Prunus domestica</i> L. (Rosaceae)	Alucha	Gum obtained from stems is considered health tonic.	Plum is common cultivated. Fruits are used in making jams, jellies. Dried leaves used as fodder while pruned branches serve as fuel wood.
90	<i>Prunus persica</i> (L.) Stokes (Rosaceae)	Shaltaloo, Zarlalo	Fruit considered health tonic.	Visited by honeybees.
91	<i>Punica granatum</i> L. (Punicaceae)	Anar, Nangorrey	Fruits edible, fruit rind (epicarp) is laxative, used for curing cough and intestinal problems.	Peach is common cultivated. Fruits are used in making jams, jellies. Dried leaves used as fodder while pruned branches serve as fuel wood.
92	<i>Pyrus communis</i> L. (Rosaceae)	Tangai, Nashpatay	Fruits are considered health tonic and laxative.	Visited by honeybees.
93	<i>Pyrus malus</i> L. (Rosaceae)	Seb, Manray	Fruit is considered as health tonic especially for heart patients.	Occurs as cultivated and wild tree. Dried seeds are called Anardana, which are used as spices and condiments. Men are named after it such as Anar Khan and Anar Gul etc.
94	<i>Pyrus pashia</i> L. (Rosaceae)	Nashpatay, Batang		Pear is cultivated as commercial fruit. Pruned branches used as firewood. Leaves are fodder. Visited by honeybees.
95	<i>Quercus baloot</i> L. (Fagaceae)	Sarrai, Banj		Various varieties of apples are commercially grown. Frequently used in preparing jams, jellies and juices. Pruned branches are used as firewood. Leaves serve as fodder. Visited by honeybees.
96	<i>Quercus dilatata</i> Lindl. ex. Royle. (Fagaceae)	Banj		Sand pear is sometimes cultivated and also found wild. Fruits are edible, used in preparing jam and jellies. Branches are used as firewood. Leaves serve as fodder. Visited by honeybees.
97	<i>Raphanus sativus</i> L. (Brassicaceae)	Molai	Radish and its leaves are considered to be digestive.	It is good timber and good and costly firewood with high heat value. Leaves are good fodder for cattle. Children play game with seeds and fruit cups.
98	<i>Rhus cotinus</i> . L (Anacardaceae)	Paroo Botay		Agricultural tools such as ploughs, axes, diggers and other tools are made due to hardness of wood. Walking sticks are made from branches.
99	<i>Rosa moschata</i> J. Herm. (Rosaceae)	Gulab	Rose water is extracted from petal. Petals are mixed with sugar to make a recipe called gulband, which used to treat intestinal problems.	It is a good timber and firewood. Leaves are good fodder cattle. Roasted seeds are eaten. Children play game with seeds. Because of hard and tough wood it is used for making gun butts, handles of plough, axes and other agricultural tools. Walking sticks are made from it.
100	<i>Robinia pseudacacia</i> L.. (Papilionaceae)	Kikar		Radish is cultivated as vegetable. Leaves are used as salad and considered to be digestive.
101	<i>Rubus fruticosus</i> . L (Rosaceae)	Kurwari		Young branches are woven into ropes for tying wood bundles. A common climbing rose used as ornamental, fencing and hedge making plant. Visited by honeybees.
				A good firewood and fodder for goat. Branches are used for making hedges and fences. Visited by honeybees.
				Fruits edible, ornamental climber and used for making fences and low

Continue table 1

S.No.	Species (Family)	Local name	Medicinal uses	Other miscellaneous uses
102	<i>Rubus ellipticus</i> Smith. (Rosaceae)	Phalwarri		quality firewood.
103	<i>Rumex hastatus</i> D. Don. (Polygonaceae)	Tarokay		Same as <i>R. fruticosus</i> .
104	<i>Rumex dentatus</i> sp. <i>klatschianus</i> (Meissn) Rech. (Polygonaceae)	Shalkhay	Leaves are demulcent. Used as antidote for Urtica dioica burns.	Leaves used in making Chattri as a flavouring agent with sour taste. Used as potherb. Acts as antidote for Urtica dioica burns.
105	<i>Salix acmophylla</i> Boiss. (Salicaceae)	Wala		Used as low quality timber and fire wood and ornamental. Weaving tools are made from young stems.
106	<i>Setaria viridis</i> (L.) P. Beauv. (Poaceae)	Wakha		Low quality cattle fodder.
107	<i>Solanum melongena</i> L. (Solanaceae)	Batnganr		Brinjal is cultivated as vegetable. Dried plant used as low quality firewood.
108	<i>Solanum nigrum</i> L. (Solanaceae)	Kachmachu	Boiled leaves are used as expectorant and for curing skin disorders.	Low quality fodder for cattle. Nighshade is used as vegetable.
109	<i>Solanum tuberosum</i> L. (Solanaceae)	Aloo, Alu		Potatoes are cultivated for domestic use and commercial selling.
110	<i>Spinacea oleracea</i> L. (Chenopodiaceae)	Palak		Spinach is cultivated for domestic use and commercial selling. Considered to be iron-rich.
111	<i>Spiraea vacciniifolia</i> D. Don. (Rosaceae).			Low quality firewood and ornamental plant.
112	<i>Symplocas chinensis</i> (Lour) Druce. (Symplocaceae)			Low quality firewood.
113	<i>Taraxacum officinale</i> Webber. (Asteraceae)	Ziar gwailey	Believed to cure malignancies, tumours and also used as purgative.	Flowers are ornamental.
114	<i>Teucrium stockianum</i> Boiss. (Lamiaceae)	Kwandli Bolay	The decoction of leaves is used for curing soar throat.	
115	<i>Trifolium resupinatum</i> L. (Papilionaceae)	Shafal, shotal		Clover is cultivated as forage. Visited by honeybees.
116	<i>Triticum sativum</i> L. (Poaceae)	Chanum		Wheat is cultivated. Young fresh plants and hay (Bhus, Bhusa) is fodder for cattle. Crushed hay is used in clay plaster as anti cracking agent.
117	<i>Urtica dioica</i> L. (Urticaceae)			Causes skin irritation and is poisonous.
118	<i>Verbascum thapsus</i> L. (Scrophulariaceae)	Khurbug	Leaves cure asthma.	Girls are named after it as Banafsha.
119	<i>Viola canescens</i> Wall. ex. Roxb. (Violaceae)	Banafsha	Astringent, demulcent and also used for curing acres. Syrup from flowers is prepared as coolant and refreshing drink.	
120	<i>Vitex negundo</i> L. (Verbenaceae)	Marward		Mostly present in graveyards. Low quality firewood. Sometimes used for making shelters.
121	<i>Vitis vinifera</i> L. (Vitaceae)	Kwar, angur	Grapes are considered health tonic and nutritious. Laxative if taken in large quantity.	Grapes are cultivated for nutritious fruits. The plant is used for making green shelter.
122	<i>Withania shufa</i> Dunal. (Solanaceae)	Sriany	Fruits are used for treating colic pain and abdominal disorders.	
123	<i>Zanthoxylum alatum</i> Roxb. (Rutaceae)	Dambara	It is believed that seeds improve speaking power.	Seeds are used as condiment in the preparation of chutney. It increases milking capability of cows. Warty stem is used for making beautiful walking sticks. Durbaro lagay is dreadful heavy stick used for beating during fight. Maize is commonly cultivated. Cobs are cooked in various ways. Dried stems and cob cases are used as firewood. Cob cases used for washing utensils. Fresh and dried leaves are fodder.
124	<i>Zea mays</i> L. (Poaceae)	Juwar	Corn oil is considered better for heart patients. Cob silk is used for curing cough.	Fruits are edible. Good quality firewood. Leaves are fodder. Spiny shoots are used for making fences and hedges. Visited by honeybees. The honey collected from this plant fetches much higher price in the market.
125	<i>Ziziphus jujuba</i> Mill. (Rhamnaceae)	Karkani	Fruits are laxative.	Fruits are edible. Good quality firewood. Leaves are fodder. Used for making fences. Visited by honeybees. The honey collected from this plant fetches much higher price in the market.
126	<i>Ziziphus satina</i> Gaertn. (Rhamnaceae)	Markhanay	Fruits are laxative.	

that has not only promoted erosion of soil but also hampered regeneration of economically important plants. Edible fruits and seeds were obtained from 25 species including 14 wild and 11 cultivated species. *Ficus palmata*, *Diospyrus lotus*, *D. kaki*, *Prunus armeniaca*, *P. domestica*, *Pyrus malus* and *Vitis vinifera* are commonly marketed fruits that earn livelihood for the local people. There are many varieties of these fruits in the area. Some of the same fruit plants are found cultivated and wild in other parts of Swat (Hussain *et al.*, 1995; Khan *et al.*, 2003; Sher *et al.*, 2004; Begum *et al.*, 2005) with similar uses.

Honey bees visit twenty-eight species (22.2%) for collecting nectar and pollen. *Acacia modesta*, *Adhatoda vasica*, *Plectranthes rugosus*, *Didymopanax roxburghiana*, *Rosa moschata*, *Helianthus annuus*, *Ziziphus sativa*, and *Z. jujuba* were the common plants frequently visited by bees. Swat is famous for apiculture as locals have been using honey as daily food item and as medicine since ages. Apiculture has attained a status of common cottage industry that markets the packed honey under different brand names to rest of the country. The prices of honey vary from Rs. 100/kg to 200/kg (= US \$ 2–4) depending upon the species of plant and honeybee. The honey from *Acacia modesta* and *Ziziphus* sp. collected by *Apis ferora* is considered to be the best and costly than honey collected by *Apis indica* and *A. mellifera* and from other plants. Honey collected by *Apis dorsata* is the cheapest.

There were twenty-seven (21.4%) species used as vegetables. They included chillies, tomato, potato, cucurbits, mustards, cabbages and spinach etc. cultivated for own use and for commercial purpose. The locals do have aesthetic sense as twelve species including *Adiantum venustum*, *Dryopteris*, *Rosa moschata*, *Helianthus annuus*, *Nerium oleander* and *Jasminum officinale* are used as ornamental plants. Some of these plants are also sold in the plant nurseries in other parts of Pakistan. The village has agriculture and livestock based economy. Fencing by plants protects crop fields from grazing animals. Nine species including *Berberis lycium*, *Otostegia limbata*, *Rosa moschata*, *Rubus fruticosus* and

Ziziphus sativa are used for making fences along field borders. Plants used for fencing are generally spiny or bushy. Ten species, including *Vitex negundo*, *Parrotia jaquemontiana*, *Dodonaea viscosa*, *Myrsine africana* and *Cotoneaster microphylla* were the preferred species for making animal sheds and shelters and roof thatching. Most houses are built from mud and wood. Thirteen species including *Pinus wallichiana*, *P. roxburghii*, *Morus alba*, *M. laevigata*, *Populus nigra*, *Ailanthus altissima*, *Quercus dilatata*, *Q. baloot*, *Olea ferruginea*, *Juglans regia*, *Platanus orientalis* and *Melia azedarh* are used as timber wood species. Hussain *et al.* (1995), Khan *et al.* (2003), Sher *et al.* (2004) and Begum *et al.* (2005) also reported similar timber wood species from other parts of Swat and our findings agree with them. Some of these species also serve as furniture, fodder and fire wood plants in the area. *Pinus wallichiana* is the best quality and highly priced timber wood in Pakistan, being only second to that of *Cedrus deodara*. Eleven species of plants including *Pinus wallichiana*, *Morus alba*, *M. laevigata*, *Platanus orientalis*, *Melia azedarh* and *Populus nigra* are used for making furniture. Among them *Pinus wallichiana* and *Juglans regia* are highly priced. Furniture made from walnut wood is the best in quality and carved work. Nine species including *Salix aecomphylla*, *Zanthoxylum alatum*, *Quercus dilatata* and *Q. baloot* are being used for making walking sticks and wooden and agricultural tools. Seven species including *Adhatoda vasica*, *Daphne mucronata*, *Vitex negundo* and *Nerium oleander* were used as insect repellent and also considered poisonous to livestock and human beings. Fruit skeleton of *Luffa aegyptiaca*, shoots of *Equisetum arvense* and cob of *Zea mays* were used for washing domestic utensils.

The present study shows some similarities in plants and their use with plants of other parts of Swat as reported by other workers (Hussain *et al.*, 1995; Khan *et al.*, 2003; Sher *et al.*, 2004; Begum *et al.*, 2005). Few to compare are *Pinus roxburghii*, *P. wallichiana*, *Quercus dilatata*, *Q. baloot*, *Ailanthus altissima*, *Salix* sp., *Ziziphus sativa*, *Z. jujuba*, *Juglans regia*, *Dodonaea viscosa*, *Adhatoda vasica*, *Ficus palmata*,

F. carica, *Fragaria indica* and *F. vasica* etc. are present in the adjoining areas with almost similar uses. Likewise, there is similarity in fruit, fodder, fire wood and vegetable plants. Another good similarity is the naming of persons after plant names. For example, Anar Khan, Anar Gul are named after *Punica granatum*, which is locally called Anar. Inzer Gul means fig flower. Yasmin, Yasmin Gul or Chambeli are the names of girls after *Jasminum* sp. The religious and suppositious plants are also the same in all over Swat such as *Ficus palmata* and *Olea ferruginea* etc. Some plants like *Prunus armeniaca*, *Acacia modesta*, *Morus* sp., *Olea ferruginea*, *Juglans regia* and *Ziziphus jujuba* etc. had multiple utilities including medicinal, timber, fuel wood, fodder, edible fruit and seed, shade plant and provide nesting facility to birds. Such species appear to be under severe biotic pressure. Deforestation and overgrazing has reduced their regeneration due to deteriorated habitat and mismanagement. The ecological problems also appear to be common through out the Swat with varying intensity. The over exploitation of plants for medicinal uses, forage, timber wood, furniture wood and fire wood etc is sever problem in the Swat district right from plains up to the snowbound peaks. The present study shows that the area is rich in plant resources and traditional knowledge that is primarily confined in elderly people. This traditional knowledge is gradually fading out because of modern health, education and communication facilities in the area. The area needs ecological management with the participation of local community for the future development and sustainable use of existing resources. This study also suggests to prepare a complete inventory of useful plants with traditional knowledge. It looks that with passage of time the traditional knowledge will vanish owing to shift from traditional health care system to modern medicine system. This will help in conservation of natural resources in the area.

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